

Claims

- [c1] A dynamic prosthetic foot having multiple load points and multiple upper sections, comprising:
- a sole having a heel end and a toe end that are substantially coplanar with one another;
 - an upper member that overlies said sole, said upper member having a heel end and a toe end;
 - said upper member having a pair of flat, transversely spaced apart, pylon supports formed in its heel end;
 - said heel end of said upper member having a gradual ninety degree bend formed therein so that said pylon supports are disposed substantially perpendicular to said sole, said heel end of said upper member separating from said sole along a parting line that is transverse to a longitudinal axis of said prosthetic foot;
 - said pylon supports including a lateral pylon support and a medial pylon support;
 - an elongate, longitudinally extending slot formed in said heel end of said upper member, said slot substantially coincident with a longitudinal axis of said prosthetic foot and said slot extending from an uppermost end of said heel end of said upper member to a preselected point that is about two-thirds the distance from said heel end to said toe end;
 - said elongate slot dividing said upper member into a pair of upper sections that respond substantially independently to forces acting upon said upper member; whereby forces acting on said lateral pylon support are substantially confined to said lateral pylon support and forces acting on said medial pylon support are substantially confined to said medial pylon support;
 - whereby forces acting upon a lateral section of said upper member are substantially attenuated when transmitted to the medial section of said upper sections; and
 - whereby forces acting upon a medial section of said upper member are substantially attenuated when transmitted to the lateral section of said upper member.

- [c2] The dynamic prosthetic foot of claim 1, wherein said lateral pylon support has a greater thickness than said medial pylon support, said greater thickness imparting greater stiffness so that forces applied to said lateral pylon support and said medial pylon support are transferred more to said medial pylon support than to said lateral pylon support, thereby mimicking the reaction of a natural foot to forces applied thereto.
- [c3] The dynamic prosthetic foot of claim 1, wherein said upper lateral member has greater thickness than said upper medial member, said greater thickness imparting greater stiffness so that forces applied to said lateral upper member encounter less elastic response than forces applied to said medial upper member thereby mimicking the reaction of a natural foot to forces applied thereto.
- [c4] The dynamic prosthetic foot of claim 1, wherein said sole has a first convexity formed in said heel end that performs the function of the bottom of a natural heel.
- [c5] The dynamic prosthetic foot of claim 4, wherein said sole has a concavity longitudinally spaced from said first convexity, said concavity performing the function of a natural arch, and said transverse parting line being in juxtaposition with said concavity.
- [c6] The dynamic prosthetic foot of claim 5, wherein said sole has a second convexity longitudinally spaced from said concavity, said second convexity performing the function of the ball of a natural foot.
- [c7] The dynamic prosthetic foot of claim 6, wherein said preselected point is an inflection point where a downward slope of said concavity meets an upward slope of said second convexity.
- [c8] The dynamic prosthetic foot of claim 1, further comprising a pylon connector secured to each of said pylon supports on a trailing side thereof.
- [c9] The dynamic prosthetic foot of claim 1, wherein said sole and a part of said upper member disposed between said parting line and said toe end of said sole

are formed integrally with one another.

[c10]

A dynamic prosthetic foot having multiple load points and a single upper, comprising:

a sole having a heel end and a toe end in substantially coplanar relation with one another;

an upper member that overlies said sole, said upper member having a heel end and a toe end;

said heel end of said upper member having a gradual ninety degree bend formed therein, said heel end of said upper member separating from said sole along a parting line that is transverse to a longitudinal axis of said prosthetic foot;

a longitudinally extending slot formed in said heel end of said upper member, said slot substantially coincident with a longitudinal axis of said prosthetic foot and said slot extending from an uppermost end of said heel end of said upper member to a preselected point member that is about two-thirds the distance from said heel end to said toe end;

said slot dividing said heel end into a lateral pylon and a lateral section of said upper member and into a medial pylon and a medial section of said upper member;

said lateral and medial pylons being disposed substantially perpendicular to said sole;

said lateral and medial pylons having a common length sufficient to interconnect said prosthetic foot and a prosthetic socket;

whereby forces acting on said lateral pylon are substantially confined to said lateral pylon and said lateral section of said upper member and forces acting on said medial pylon are substantially confined to said medial pylon and said medial section of said upper member;

whereby forces acting upon said lateral section of said upper member are substantially attenuated when transmitted to the medial section of said upper section; and

whereby forces acting upon said medial section of said upper member are substantially attenuated when transmitted to the lateral section of said upper

section.

- [c11] The dynamic prosthetic foot of claim 10, further comprising:
said lateral pylon having a greater thickness than said medial pylon;
said greater thickness imparting greater stiffness so that forces applied to said lateral pylon and said medial pylon are applied more to said medial pylon than to said lateral pylon, thereby mimicking the reaction of a natural foot to forces applied thereto.
- [c12] The dynamic prosthetic foot of claim 10, wherein said lateral section of said lateral upper member has a greater thickness than said medial section of said medial upper member, said greater thickness imparting greater strength so that forces applied to said lateral upper member are met with less elastic response than forces applied to said medial upper member, thereby mimicking the reaction of a natural foot to forces applied thereto.
- [c13] The dynamic prosthetic foot of claim 10, wherein said sole has a first convexity formed in said heel end that performs the function of the bottom of a natural heel.
- [c14] The dynamic prosthetic foot of claim 13, wherein said sole has a concavity longitudinally spaced from said first convexity, said concavity performing the function of a natural arch and said transverse parting line being in juxtaposition with said concavity.
- [c15] The dynamic prosthetic foot of claim 14, wherein said sole has a second convexity longitudinally spaced from said concavity, said second convexity performing the function of the ball of a natural foot.
- [c16] The dynamic prosthetic foot of claim 15, wherein said preselected point is an inflection point where a downward slope of said concavity meets an upward slope of said second convexity.
- [c17] The dynamic prosthetic foot of claim 10, wherein said sole and a part of said upper member disposed between said parting line and said toe end of said sole are formed integrally with one another.

- [c18] The dynamic prosthetic foot of claim 10, wherein said lateral and medial pylons are laminated at respective uppermost ends thereof to a prosthetic socket.
- [c19] The dynamic prosthetic foot of claim 10, wherein said lateral and medial pylons are connected at respective uppermost ends thereof to a connector member and wherein said connector member is laminated to a prosthetic socket.
- [c20] The dynamic prosthetic foot of claim 10, wherein said lateral and medial pylons are connected at respective uppermost ends thereof to a pyramid-receiving connector that engages a pyramid that depends from said prosthetic socket.